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On the radial abundance gradients in discs of irregular galaxies

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Abstract

© 2015 The Authors. We determine the radial abundance distributions across the discs of 14 irregular galaxies of the types Sm and Im (morphological T types 9 and 10) as traced by their HII regions. The oxygen and nitrogen abundances in HII regions are estimated through the Te method or/and with the counterpart method (C method). Moreover, we examine the correspondence between the radial abundance gradient and the surface brightness profile.We find that irregular galaxies with a flat inner profile (flat or outwardly increasing surface brightness in the central region) show shallow (if any) radial abundance gradients. On the other hand, irregular galaxies with a steep inner profile (with or without a bulge or central star cluster) usually show rather steep radial abundance gradients. This is in contrast to the widely held belief that irregular galaxies do not usually show a radial abundance gradient.

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Keywords

Galaxies: abundances, Galaxies: irregular, Galaxies: photometry, HII regions, ISM: abundances